

CLAIMS

1. A light emitting device including a semiconductor die, the semiconductor die comprising:

an epitaxial structure arranged on a substrate, the epitaxial structure forming an active light generating region between a first layer on a first side of the active region and having a first conductivity type, and a second layer on a second side of the active region and having a second conductivity type, the second side of the active region being opposite the first side of the active region and the second conductivity type being different than the first conductivity type;

a first contact in operative electrical communication with the active region via the first layer in the epitaxial structure, the first contact being arranged on a side of the epitaxial structure opposite the substrate;

a second contact in operative electrical communication with the active region via the second layer in the epitaxial structure, the second contact being arranged on a side of the epitaxial structure opposite the substrate;

a first contact trace corresponding to the first contact and defined at a surface thereof distal from the substrate, the first trace including at least one area designated for bonding; and,

a second contact trace corresponding to the second contact and defined at a surface thereof distal from the substrate, the second trace including at least one area designated for bonding;

wherein the first contact trace is substantially enclosed within the second contact trace.

2. The light emitting device of claim 1, wherein the first layer of the epitaxial structure is formed between the active region and the substrate.

3. The light emitting device of claim 1, wherein:

the first conductivity type is n-type, the first contact is an n-type contact, and the first trace is an n-type trace; and,

the second conductivity type is p-type, the second contact is a p-type contact, and the second trace is a p-type trace.

4. The light emitting device of claim 1, wherein the first trace forms an open ended elongated sinuous path.

5. The light emitting device of claim 1, wherein the light emitting device further comprises:

a support to which the semiconductor die is mounted; and,

a plurality of bumps arranged on the support, the bumps bonding the semiconductor die to the support via the first and second contacts at the areas designated for bonding in the first and second traces.

6. The light emitting device of claim 5, wherein the bumps bond the semiconductor die to the support via a thermosonic bonding process including the application of ultrasonic energy.

7. The light emitting device of claim 1, wherein the surface of the first contact distal from the substrate and the surface of the second contact distal from the substrate are substantially coplanar with one another.

8. A method of manufacturing a light emitting device comprising:

(a) providing a semiconductor die, the semiconductor die including an epitaxial structure arranged on a substrate, the epitaxial structure having an active light generating region between a first layer on a first side of the active region and having a first conductivity type, and a second layer on a second side of the active region and having a second conductivity type, the second side of the active region being opposite the first side of the active region and the second conductivity type being different than the first conductivity type;

(b) forming a first contact on the semiconductor die in operative electrical communication with the active region via the first layer of the epitaxial structure, the first contact being arranged on a side of the epitaxial structure opposite the substrate

and having a corresponding first contact trace defined at a surface thereof distal from the substrate, the first trace including at least one area designated for bonding; and,

(c) forming a second contact on the semiconductor die in operative electrical communication with the active region via the second layer of the epitaxial structure, the second contact being arranged on a side of the epitaxial structure opposite the substrate and having a corresponding second contact trace defined at a surface thereof distal from the substrate, the second trace including at least one area designated for bonding;

wherein the first contact trace is substantially enclosed within the second contact trace.

9. The light emitting device of claim 8, wherein the first layer of the epitaxial structure is arranged between the active region and the substrate.

10. The method of claim 9, further comprising:

(d) providing a support having arranged thereon a plurality of bumps; and,
(e) thermosonically bonding the semiconductor die to the support via application of ultrasonic energy such that the bumps bond the semiconductor die to the support via the first and second contacts at the areas designated for bonding in the first and second traces.